

REMARKS

In the Office Action dated June 7, 2005, claim 8 was rejected under 35 U.S.C. §112, second paragraph because the Examiner stated claim contradicts claim 1. In response, Applicants submit that claim 8 did not contradict original claim 1 because original claim 1 referred to obtaining a plurality of projections of the organ during at least one rotation of the focus around the organ. Claim 8 depended from claim 3, which further refined claim 1 by stating that a sequence of test images of the organ is acquired in step (a). There is nothing contradictory regarding the requirement in original claim 1 of obtaining a plurality of projections of the organ during at least one rotation of the focus around the organ, and the requirement of claim 8 that, if test images of the organ are acquired, the test images are acquired with only a partial rotation of the focus around the organ. The non-contradictory nature of claim 8 is not altered by the present Amendment, wherein the subject matter of claim 3 has now been embodied in original independent claim 1. Claim 8 does not contradict amended claim 1 for the same reasons discussed above with regard to original claim 1, and therefore claim 8 has been retained in the application in its original form.

Claims 1, 2 and 14 were rejected under 35 U.S.C. §102(e) as being anticipated by Sembritzki et al. Claims 3-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sembritzki et al. Claims 9-13 and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sembritzki et al in view of Hounsfield.

As noted above, claim 1 has been amended to bring the subject matter of claim 3 therein, and the subject matter of claim 3, in apparatus form, has also been incorporated in independent claim 14. New independent claim 16 is submitted

herein, which is a combination of original claims 1 and 9, and new independent apparatus claim 17 is submitted herewith which has been formulated based on original claim 14, with the subject matter of claim 9, in apparatus form, incorporated therein. New dependent claim 18 depends from claim 17, and corresponds to original claim 15.

In view of the amendments to the claims, the only rejections which remain relevant are the rejections of original claims 3 and 9. These rejections are respectfully traversed for the following reasons.

With regard to the rejection of original claim 3 under 35 U.S.C. §103(a) as being unpatentable over Sembritzki, the Examiner acknowledged that the Sembritzki et al reference does not mention "test images" but the Examiner stated it would have been obvious to employ the system disclosed in Sembritzki et al to acquire multiple images, some of which may be for testing. Applicants respectfully submit that original claim 3, and current claims 1 and 14, require more than merely acquiring multiple images, some of which may be for testing. The term "test images" is used to distinguish the images (sets of projection data) that are acquired and then analyzed to determine which of those test images were acquired during a rest phase of the organ in question, and which of those test images were acquired during a movement phase of the organ. A diagnostic image of the organ is then reconstructed using only projection data from the test images that have been identified as being acquired during the rest phase. Moreover, independent claims 1 and 14 specifically describe the manner by which the sets of projection data are analyzed to determine whether the test image containing the projection data was acquired during a rest phase, or during a movement phase.

The Sembritzki et al reference discloses a method wherein movement artifacts are detected by comparing projection data in question with complementary projection data, offset by 180°. This has the disadvantage, as discussed at column 3, lines 8-25 of the Sembritzki reference itself, of not permitting a recognition to be made as to whether the data of the projection or their complementary data are falsified by movement of the examination subject. The Sembritzki et al reference discloses a computed tomography apparatus and method to avoid that problem.

By contrast, in the method and apparatus set forth in claims 1 and 14, movement artifacts are not detected by analyzing a series of complete, diagnostic images, but instead are detected by analyzing a sequence of images obtained in rapid succession (the test images) and, as set forth in claim 8, the test images can be generated by only a partial circumferential reconstruction (partial rotation of the focus around the organ). The test images in which the motion artifacts are detected, therefore, are not the same image, or one of the images, that is then used as the diagnostic image. By contrast, the diagnostic image is generated using only projection data from test images that have been identified as having been acquired during the rest phase of the organ.

This enables the detection for movement artifacts to be undertaken using images requiring a reduced computation capacity, so that the decision as to whether they have been acquired during a rest phase can be made quickly. The detection of movement artifacts based on the content of the test images, rather than on the content of the actual diagnostic image, is not disclosed or suggested in the Sembritzki et al reference.

The subject matter of claims 1 and 14, therefore, would not have been obvious to a person of ordinary skill in the field of computed tomography based on the teachings of Sembritzki et al. Claims 2 and 4-8 add further method steps to the non-obvious method of claim 1, and are therefore patentable over the teachings of Sembritzki et al for the same reasons discussed above in connection with claim 1.

As noted above, new claims 16 and 17 embody the subject matter of original claim 9. The rejection of original claim 9 based on the teachings of Sembritzki et al and Hounsfield is respectfully traversed for the following reasons.

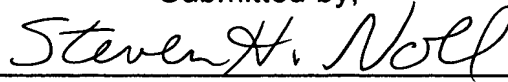
As noted above, the Sembritzki et al reference is based on a comparison of projection data and complementary projection data in order to detect movement artifacts of the subject under examination. In the subject matter of original claim 9, now embodied in independent claims 16 and 17, by contrast, a signal representing the periodic movement of the organ in question is analyzed.

Applicants acknowledge that the Hounsfield reference teaches obtaining a signal that represents the movement of a periodically moving *subject*. An organ, however, represents a portion of the subject within the subject and the Hounsfield reference does not disclose or suggest obtaining a signal to determine whether projection data representing an organ within a subject had been acquired during a rest phase of that organ. Modifying the system in Sembritzki et al in accordance with the teachings of Hounsfield, therefore, would not result in a method or an apparatus wherein a signal representing movement of an organ is analyzed to identify rest phases of the organ, and then using only projection data from that rest phase to generate a diagnostic image, as set forth in claims 16 and 17. Claims 16 and 17, as well as claim 18, therefore, would not have been obvious to a person of ordinary skill

in the field of computed tomography based on the teachings of Sembritzki et al and Hounsfield.

All claims of the application are therefore submitted to be in condition for allowance, and early reconsideration of the application is respectfully requested.

Submitted by,



(Reg. 28,982)

SCHIFF, HARDIN LLP
CUSTOMER NO. 26574
Patent Department
6600 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606
Telephone: 312/258-5790
Attorneys for Applicant.

CH1\ 4317287.1